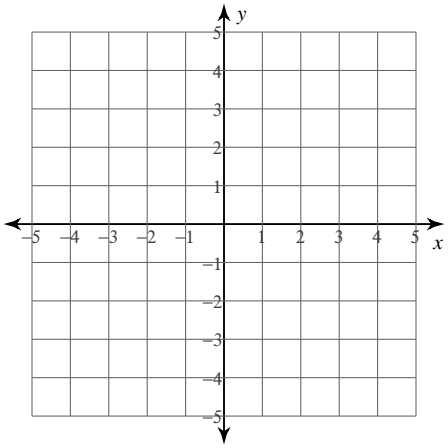
Algebra 1-2 Name_____

Semester 2 Final Exam Review

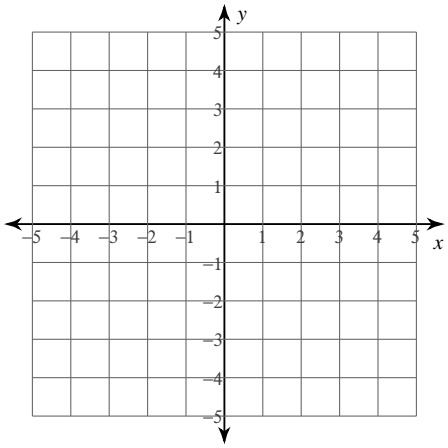
Date_____ Period____

Solve each system by graphing.

1) $y = -\frac{1}{4}x + 2$
$y = \frac{3}{4}x - 2$



2) $y = -\frac{7}{2}x - 3$
$y = -\frac{7}{2}x + 1$



Solve each system by elimination.

3) $-5x + 10y = -30$
$5x - 10y = 30$

4) $7x - 7y = 16$
$-7x + 7y = -14$

5) $5x - 8y = 29$
$-5x - 2y = 1$

6) $5x - y = -6$
$6x - y = -8$

7) $-8x - 4y = 8$
$9x - 3y = -9$

8) $8x - 5y = 20$
$-6x + 4y = -16$

How many solutions does the system have?

9) $y = 4x + 3$
$y = 4x - 4$

10) $y = \frac{1}{3}x - 2$
$y = -\frac{1}{3}x - 4$

Simplify. Your answer should contain only positive exponents.

11) $4x^3 \cdot 4x^3 \cdot 2x^4 y^2$

12) $a^3 b^0 \cdot 3ba^{-4}$

13) $\frac{y^{-1}}{2x^3}$

14) $\frac{4a^{-4}b^3}{3a^2}$

15) $\left(4x^{-4}y^4\right)^3$

16) $\left(4x^4y^0\right)^2$

Exponential Functions:

17) Solve for x: $3 \cdot 2^x = 12$

18) Bacteria grow at a rate of $40 \cdot 2^t$ where t is the number of 10-minute time periods. How many bacteria will there be in 60 minutes?

Simplify each sum.

19) $\left(4k - 1 - 3k^4\right) + \left(4k^2 + 4 + 5k\right)$

20) $\left(7x + 7x^2 - 6\right) + \left(3x + 4x^2 + 8\right)$

Simplify each difference.

21) $\left(3p^4 + 4p + 7p^3\right) - \left(8p^4 + 4p + 2p^3\right)$

22) $\left(8 + 8m^2 - 8m^3\right) - \left(7m^3 + 1 + 4m^2\right)$

Find each product.

23) $(3m+4)(7m-4)$

24) $(x+6)(x-5)$

25) $(2n-6)(n^2-5n-7)$

26) $(5b-8)(5b+8)$

Factor the common factor out of each expression.

27) $36x^9+18x^5-45x^4$

28) $-9m^4+30m^2+6m$

Factor each completely.

29) n^2-4n+3

30) $x^2-2x-80$

31) $x^2-4x-12$

32) $7n^2-62n-9$

33) $3x^2 + 14x + 8$

34) $4k^2 + 12k + 9$

35) $2x^2 - 13x - 20$

36) $p^2 + 4p + 4$

37) $m^2 - 16$

38) $4n^2 - 9$

Solve each equation by factoring.

39) $(n + 1)(3n - 1) = 0$

40) $x(x - 4) = 0$

41) $b^2 + 2b - 8 = 0$

42) $v^2 - 10v + 16 = 0$

43) $2x^2 + x - 6 = 0$

44) $4n^2 - 15n + 9 = 0$

Write a quadratic equation in standard form from the given solutions.

45) $\{3, -5\}$

46) $\{-1, 4\}$

Find the discriminant, and state the number of solutions.

47) $-p^2 - 8p + 20 = 0$

48) $x^2 - 4x + 4 = 0$

Solve each equation with the quadratic formula.

49) $10p^2 + 11p - 17 = 0$

50) $x^2 - 10x - 119 = 0$

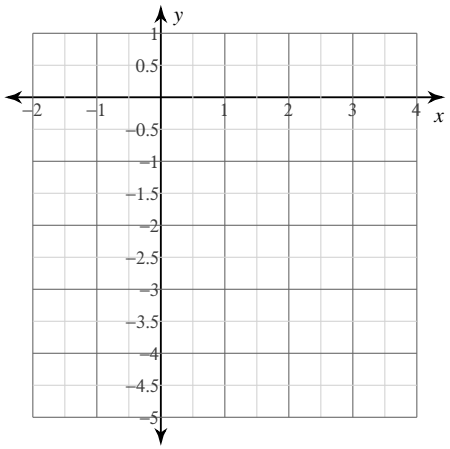
Find the vertex of the quadratic equation.

51) $y = 2x^2 + 6$

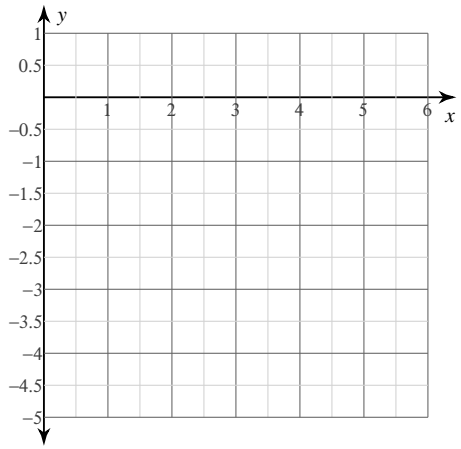
52) $y = x^2 + 12x - 32$

Sketch the graph of each function.

53) $y = -x^2$



54) $y = x^2 - 6x + 5$



Simplify.

55) $\sqrt{448}$

56) $\sqrt{125}$

57) $\sqrt{80p^2}$

58) $3\sqrt{15} \cdot 3\sqrt{12}$

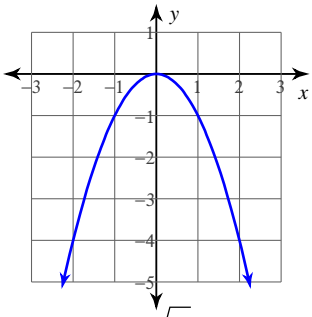
Solve each equation.

59) $\sqrt{b+1} = 5$

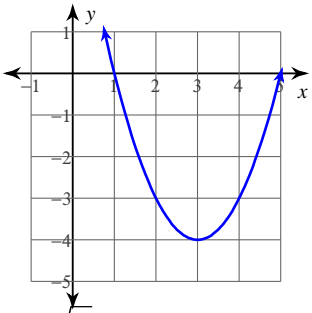
60) $17 = 9 + \sqrt{n+5}$

Answers to Semester 2 Final Exam Review

1) $(4, 1)$
2) No solution
3) Infinite number of solutions
4) No solution
5) $(1, -3)$
6) $(-2, -4)$
7) $(-1, 0)$
8) $(0, -4)$
9) No solution
10) One solution
11) $32x^{10}y^2$
12) $\frac{3b}{a}$
13) $\frac{1}{2yx^3}$
14) $\frac{4b^3}{3a^6}$
15) $\frac{64y^{12}}{x^{12}}$
16) $16x^8$
17) 2
18) 2560 bacteria
19) $-3k^4 + 4k^2 + 9k + 3$
20) $11x^2 + 10x + 2$
21) $-5p^4 + 5p^3$
22) $-15m^3 + 4m^2 + 7$
23) $21m^2 + 16m - 16$
24) $x^2 + x - 30$
25) $2n^3 - 16n^2 + 16n + 42$
26) $25b^2 - 64$
27) $9x^4(4x^5 + 2x - 5)$
28) $3m(-3m^3 + 10m + 2)$
29) $(n - 3)(n - 1)$
30) $(x + 8)(x - 10)$
31) $(x - 6)(x + 2)$
32) $(7n + 1)(n - 9)$
33) $(3x + 2)(x + 4)$
34) $(2k + 3)^2$
35) Prime
36) $(p + 2)^2$
37) $(m + 4)(m - 4)$
38) $(2n + 3)(2n - 3)$
39) $\left\{-1, \frac{1}{3}\right\}$
40) $\{4, 0\}$
41) $\{-4, 2\}$
42) $\{8, 2\}$
43) $\left\{\frac{3}{2}, -2\right\}$
44) $\left\{\frac{3}{4}, 3\right\}$
45) $x^2 + 2x - 15$
46) $x^2 - 3x - 4$
47) 12; two solutions
48) 0; one solution
49) $\{0.865, -1.965\}$
50) $\{17, -7\}$
51) (0, 6)
52) (-6, 76)
53)



54)



55) $8\sqrt{7}$
56) $5\sqrt{5}$
57) $4p\sqrt{5}$
58) $54\sqrt{5}$
59) $\{24\}$
60) $\{59\}$